Dairy Research

By Allison Lawton, Buzz Burhans, Daryl Nydam and Thomas Overton

Field study suggests opportunity for improved feeding management of dry cows and ketosis management on farms.

Feed management of dry cows and ketosis

A large commercial farm-based field study, funded in part by the New York Farm Viability Institute, seeks to identify relationships between nutritional strategies and non-nutritional factors related to facilities and grouping management. Post-calving health outcomes, milk production, reproductive performance and key blood-based biomarkers will be evaluated. Currently 55 herds are enrolled and 17 more will be added. Herds should have a minimum of 400 milking cows and be housed in freestalls. The farm must have records available by computer or monthly DHI testing. A cohort of cows is selected on the first visit and is followed throughout the study. Body condition and locomotion scores are recorded at each of four visits. Forage samples and TMRs are collected and the Penn State Particle Separator (two-sieve) is used to analyze particle size distribution.

Study data is not summarized yet, however, two preliminary findings worth noting relate to the particle size of the pre-fresh and dry cow TMR and the prevalence of subclinical ketosis (hyperketonemia).

Figure 1. *Recommendations and particle size distributions for 55 pre-fresh TMRs using the Penn State Particle Separator.*

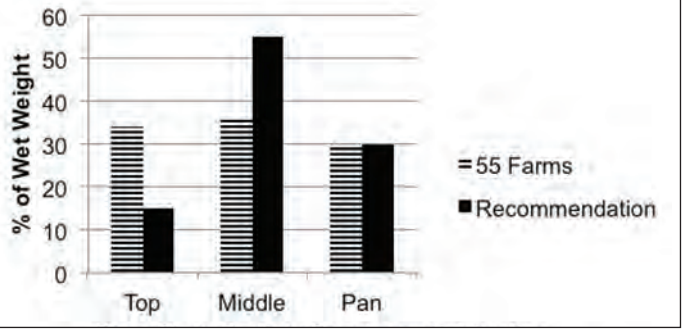

Figure 2. *Prevalence of hyperketonemia between 3 and 14 DIM in 52 commercial dairy farms in New York.*

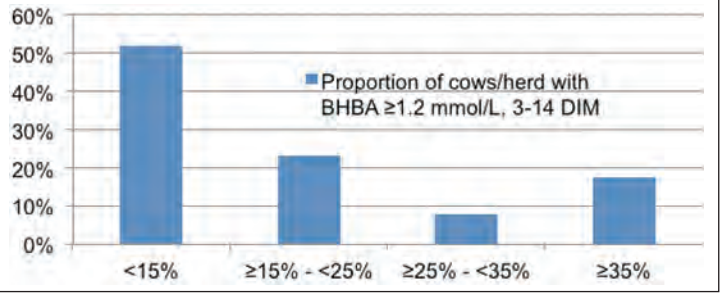

Figure 1 shows recommended particle size distributions for dry cow rations using the Penn State Particle Separator and the average pre-fresh TMR distributions from the 55 herds. Results suggest significant opportunity to chop and process the straw or hay in these rations. We have worked with some farms on their feeding management and seen dramatic reductions in postcalving health issues.

Pre-fresh blood samples are taken on the second visit from 24 cows (16 close-up dry cows and 8 springing heifers) and 16 to 17 days later from the same cows on the post-fresh visit. Nonesterified fatty acid (NEFA) concentrations are analyzed from the plasma acquired at the pre-fresh visit. Haptoglobin and NEFA concentrations are analyzed from the plasma acquired on the post-fresh visit. Using the Precision Xtra meter, blood is analyzed for □-hydroxybutyrate (BHBA) on-farm at the post-fresh visit. Cows with a 1.2 mmol/L BHBA or greater are diagnosed with hyperketonemia.

Of the 52 herds completed, 27 herds had less than 15% of sampled cows 3 to 14 DIM with a BHBA concentration of ≥1.2 mmol/L; 14 had no cows with elevated BHBA concentrations. This indicates 48% of herds sampled were above the alarm level, identified as 15% or more of sampled cows 3 to 14 DIM with a BHBA concentration of ≥1.2 mmol/L (Figure 2). Almost half of the herds sampled have room for improvement. The highest proportion of cows in a herd with elevated BHBA concentrations was 61%.

Variation is seen between TMR particle size results and proportion of cows per herd with hyperketonemia. By following the particle size recommendations, sorting can be minimized and hyperketonemia may be reduced. After data collection is finished, impacts on herd performance, reproduction and health will be quantified so diagnostic tools can be used that will evaluate herd-level opportunities for improved management and profitability. ❐

FYI

■ **Allison Lawton** is Dairy Research Specialist, **Buzz Burhans** is consultant with Dairy-Tech group, and **Daryl Nydam** and **Thomas Overton** are professors in the College of Veterinary Medicine and College of Agriculture and Life Sciences at Cornell University.